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10/596,715	06/22/2006	Tsuyoshi Hasegawa	60303.58/ho	9865
82168 7590 03/04/2010 Neomax Materials Co., Ltd. c/o Keating & Bennett, LLP 1800 Alexander Bell Drive Suite 200 Reston, VA 20191				
EXAMINER				
GAMINO, CARLOS J				
ART UNIT		PAPER NUMBER		
1793				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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# Office Action Summary

**Application No.**

10/596,715

**Applicant(s)**

HASEGAWA ET AL.

**Examiner**

CARLOS GAMINO

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-17 and 24-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-17 and 24-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. **Claims 12 and 16** are objected to because of the following informalities:  
"brazing material foil" should be --brazing foil--. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. **Claims 12-17 and 24-29** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 12 recites the limitation "the brazing material foil" in line 4. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:  
  
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
6. **Claims 12-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (JP 2003-145290) in view of Yasui et al. (US 5,289,965).

Regarding claim 12, Hasegawa teaches (refer to the enclosed written translation for all paragraph references):

A brazing method for brazing a first member and a second member [members (5, 21, 22, 23, 32, 33)] to be joined via a braze joint [brazing filler metal (13)], method comprising the steps of:

preparing the first member and the brazing material, the first member [figure 3 shows two members (5) of composite (1); composite one will be used to show the structure of members (5)] including a base plate [stainless steel member (11)] composed of a ferrous material and a diffusion suppressing layer [Fe atom diffusion suppressing layer (12)] laminated on the base plate [see paragraph 0016] for suppressing diffusion of Fe atoms into the braze joint from the base plate during the brazing,

the diffusion suppressing layer being composed of a Ni-Cr alloy essentially comprising not less than about 15 mass% and not greater than about 40 mass% of Cr [layer (12) can be 25-30%mass Cr; paragraph 0019],

the brazing material foil being composed of a Cu-Ni alloy essentially comprising not less than about 10 mass% and not greater than about 20 mass% of Ni [Cu-Ni brazing filler with 15% or less Ni; paragraph 0021];

assembling the first and second members into a temporary assembly with the brazing material foil disposed between the diffusion suppressing layer of the first member and the second member [figure 3 shows the members (5) assembled for brazing; 0027];

performing a brazing process by maintaining the temporary assembly at a brazing temperature of not less than about 1,200°C [the brazing temperature is around 1100-1250°C; paragraph 0024],

and cooling the resulting assembly [The assembly is inherently cooled in order for other manufacturing steps to happen such as: assembly, inspection, packing, and shipping. Additionally, the assembly is inherently cooled in order to perform the corrosion resistance test; paragraph 0028.].

Hasegawa does not teach:

that the braze material is a foil;

the exact same ranges; and

fusing the brazing material foil and diffuse Ni atoms and Cr atoms into the fused brazing material foil from the diffusion suppressing layer to form the braze joint, causing the resulting brazing material of the braze joint to have a higher melting point than the brazing temperature to self-solidify all of the brazing material of the braze joint wherein the braze joint is free from segregated solidification and is composed of a Cu-Ni-Cr alloy comprising not less than about 34 mass% of Ni and not less than about 10 mass% of Cr.

Regarding the use of foil, Hasegawa does not teach the use of foil but does teach that the members are laminated with the braze material and that the filler material may be prepared separately; paragraph 0025.

Yasui teaches that cladding with a braze material [lamination] or using a sheet are interchangeable steps for brazing; column 5, lines 5-17.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the braze material of Hasegawa could be applied through cladding or as a foil as taught by Yasui. One of ordinary skill in the art would appreciate that the method of applying braze is not critical, therefore selection of a particular application would have been within purview of one of ordinary skill in the art at the time of the invention absent any unexpected results.

Regarding the ranges, Hasegawa and the claims differ in that Hasegawa does not teach the exact same ranges as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the ranges taught by Hasegawa overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Regarding the results of the claimed method, it is the examiners position that since the prior art method is identical to that claimed then the prior art method will also achieve fusing the brazing material foil and diffuse Ni atoms and Cr atoms into the fused brazing material foil from the diffusion suppressing layer to form the braze joint, causing the resulting brazing material of the braze joint to have a higher melting point than the brazing temperature to self-solidify all of the brazing material of the braze joint wherein the braze joint is free from segregated solidification and is composed of a Cu-Ni-Cr alloy comprising not less than about 34 mass% of Ni and not less than about 10 mass% of Cr.

Regarding claim 13, Hasegawa teaches:

wherein the second member includes a base plate composed of a ferrous material, and a diffusion suppressing layer laminated on the base plate for suppressing diffusion of Fe atoms into the braze joint from the base plate during the brazing, the diffusion suppressing layer of the second member being composed of a Ni-Cr alloy essentially comprising not less than about 15 mass% and not greater than about 40 mass% of Cr [as noted above members (5) are brazed together and members (5) are made of component (1) therefore, the rejection in claim 12 of the Cr content also applies here].

Regarding claim 14, Hasegawa teaches:

wherein the base plates of the first member [stainless steel member (11)] and the second member are each composed of a stainless steel.

Regarding claim 15, Hasegawa teaches:

wherein the Ni-Cr alloy of the diffusion suppressing layer has a Cr content of not less than about 30 mass% [the Cr content can be 15-25% or 25-30%; paragraph 0019].

Hasegawa and the claims differ in that Hasegawa does not teach the exact same ranges as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the ranges taught by Hasegawa overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

7. **Claims 24-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (JP 2003-145290).

Regarding claim 24, Hasegawa teaches:

This claim only differs from claim 12 in that it does not require a brazing foil but a laminated brazing material on the diffusion suppressing layer.



Therefore, the rejection of claim 12 above applies, minus the foil, along with the following.

Hasegawa teaches in claim 2 that the brazing filler metal is laminated on top of the diffusion suppressing layer.

Regarding claims 25-27, these claims are identical to claims 13-15 thus the reasoning relied upon to reject claims 13-15 also applies to claims 25-27.

8. **Claims 16, 17, 28 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (JP 2003-145290 A) and Yasui et al. (US 5,289,965) as applied to claim 12 above and Hasegawa et al. (JP 2003-145290 A) as applied to claim 24, and in further view of Ishio et al. (EP 1,068,924 A1) (see IDS).

Regarding claim 16, neither Hasegawa nor Yasui teach:

wherein the brazing material has a thickness of not less than about 20  $\mu\text{m}$  and not greater than about 60  $\mu\text{m}$ .

Ishio teaches a method of joining stainless steel members using a Fe diffusion layer and a Cu braze alloy. The thickness of the braze alloy is 13-70 $\mu\text{m}$ ; paragraph 0052.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the thickness of Ishio could be incorporated into Hasegawa/Yasui. One would look to Ishio for a braze thickness since Hasegawa is silent as to the thickness of the braze layer. Additionally, Ishio teaches a range for the thickness therefore, braze thickness is a known variable and since it has been held that where the general

conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In *re* Aller, 105 USPQ 233.

Ishio and the claims differ in that Ishio does not teach the exact same ranges as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the ranges taught by Ishio overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

"The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", *In re Peterson* 65 USPQ2d 1379 (CAFC 2003).

Also, *In re Geisler* 43 USPQ2d 1365 (Fed. Cir. 1997); *In re Woodruff*, 16 USPQ2d 1934 (CCPA 1976); *In re Malagari*, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Regarding claim 17, Hasegawa teaches:

wherein the brazing temperature is not less than about 1,200°C and not higher than about 1,250°C [brazing is done from 1100-1250°C; paragraph 0024], and a duration for which the temporary assembly is maintained at the brazing temperature is not shorter than about 30 min and not longer than about 60 min [brazing is done for 10-50 min; paragraph 0024].

Hasegawa and the claims differ in that Hasegawa does not teach the exact same ranges as recited in the instant claims.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the ranges taught by Hasegawa overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages”, In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

### ***Response to Arguments***

9. Applicant's arguments filed 11/17/09 have been fully considered but they are not persuasive.
10. Applicant's arguments concerning what is taught in paragraph 0013 of Hasegawa are moot since the examiner has relied upon paragraph 0021 to teach the brazing filler material can contain up to 15% Ni.
11. Regarding the applicant's arguments concerning any of the following limitations:

*fuse the brazing material foil and diffuse Ni atoms and Cr atoms into the fused brazing material foil from the diffusion suppressing layer to form the braze joint, causing the resulting brazing material of the braze joint to have a higher melting point than the brazing temperature to self-solidify all of the brazing material of the braze joint wherein the braze joint is free from segregated solidification and is composed of a Cu-Ni-Cr alloy comprising not less than about 34 mass% of Ni and not less than about 10 mass% of Cr.*

Since the claimed method is not indistinguishable from that of the prior art then it is the examiner's position that it would necessarily flow that the prior art method would also exhibit this behavior. Should the applicant argue that the prior art method does not, as applicant does on page 11, then the applicant's method would also not exhibit this behavior making applicant's claims and specification non-enabling.

12. Regarding the applicant's arguments that Ishio does not cure the deficiencies of Hasegawa in claim 12, the examiner agrees but notes that Ishio is not used in the rejection of claim 12.

### **Conclusion**

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARLOS GAMINO whose telephone number is (571) 270-5826. The examiner can normally be reached on Monday-Thursday, 9:30am-7:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica L. Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CG

/Jessica L. Ward/  
Supervisory Patent Examiner, Art Unit 1793